



# Clearview Strategic Partners

— PROVIDING GLOBAL SOUTH CLEAN ENERGY INSIGHTS —

## **Financing the Transition: Evaluating Pathways to Green Molecule Cost Competitiveness**

**Location: AHP Conference, Addis Ababa, Ethiopia**

**Date: Tuesday, April 8<sup>th</sup>, 2025**



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- **Purpose-built analytical platform** for assessing green fertilizer project viability.
- Combines **financial modeling** with critical externalities:
  - Fertilizer access and distribution costs
  - Volatility protection (hedging against gas and fertilizer price fluctuations)
  - Food security and agricultural productivity impacts
- Provides scenario-based insights tailored specifically for **emerging market contexts**.



# Case Study Structure: Three Step Analysis



Cost of Capital

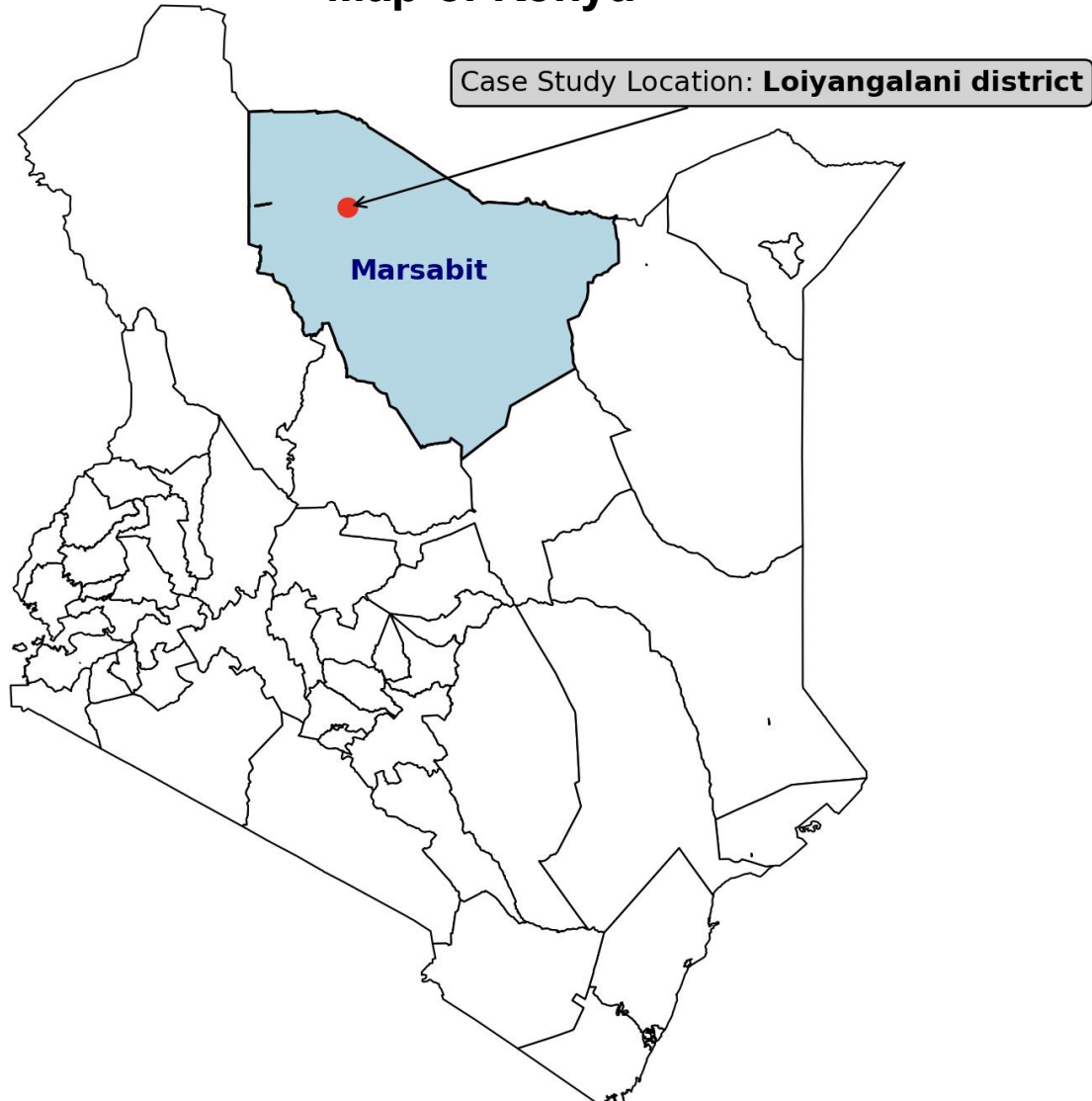
Green vs. Gray  
Cost Breakdown

Pricing  
Externalities



# Kenya's Fertilizer Industry & Case Selection

Map of Kenya

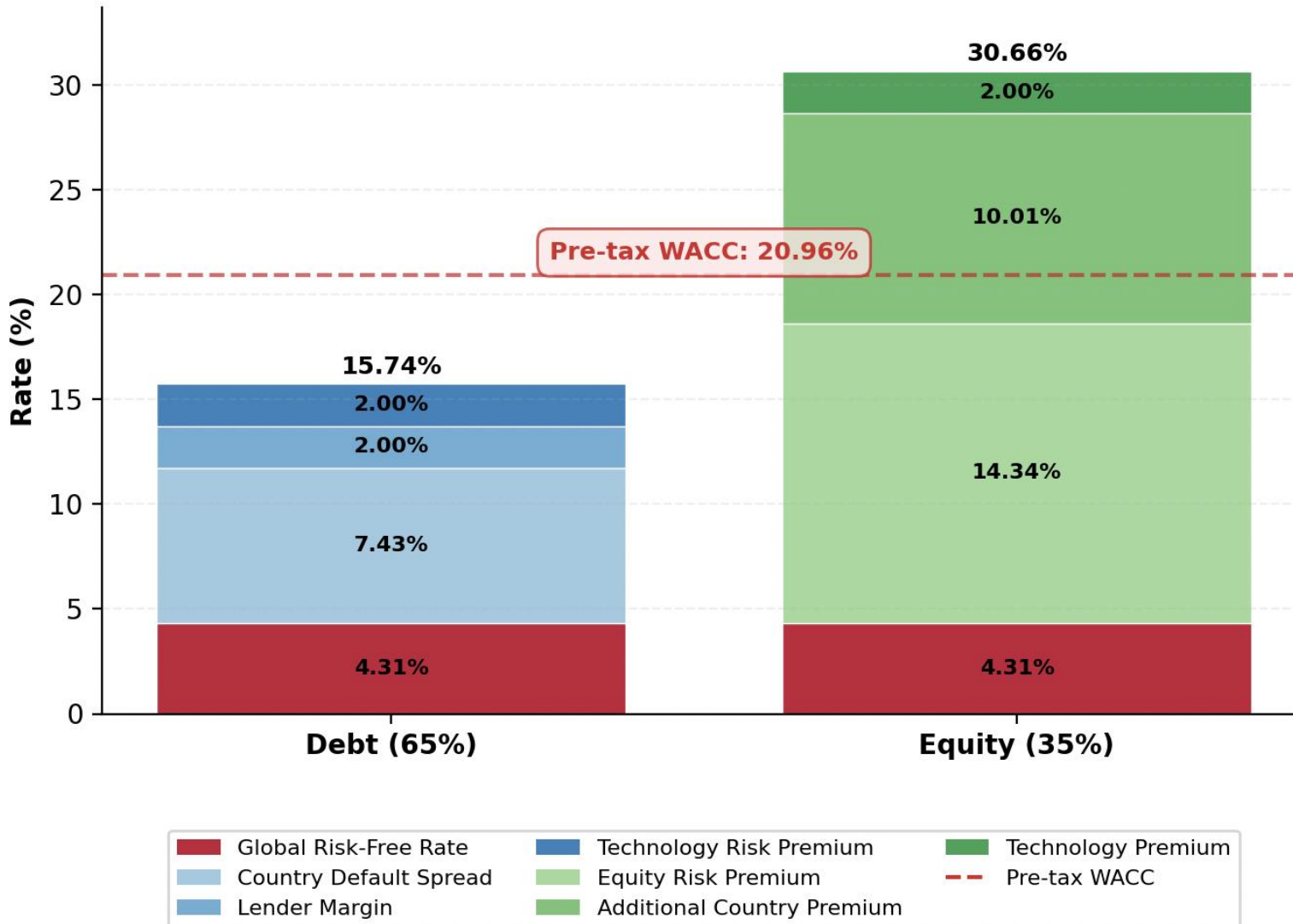


- Kenya imports more than **90%** of its fertilizer.
- Highly reliant on international natural gas markets and foreign currency.
- **Loiyangalani**, in Marsabit, is a hub for renewable energy and hosts the Lake Turkana Wind Power Project (310 MW). The county also faces significant food insecurity, in part caused by limited fertilizer access and variable rainfall.
- **High inland transportation costs** to Marsabit, from the port of Mombasa, **amplify fertilizer price volatility**, making it an ideal location to evaluate benefits of domestic green fertilizer production.

# Emerging Markets Pay a Premium for Capital



WACC Estimate for Kenyan Green Ammonia Projects

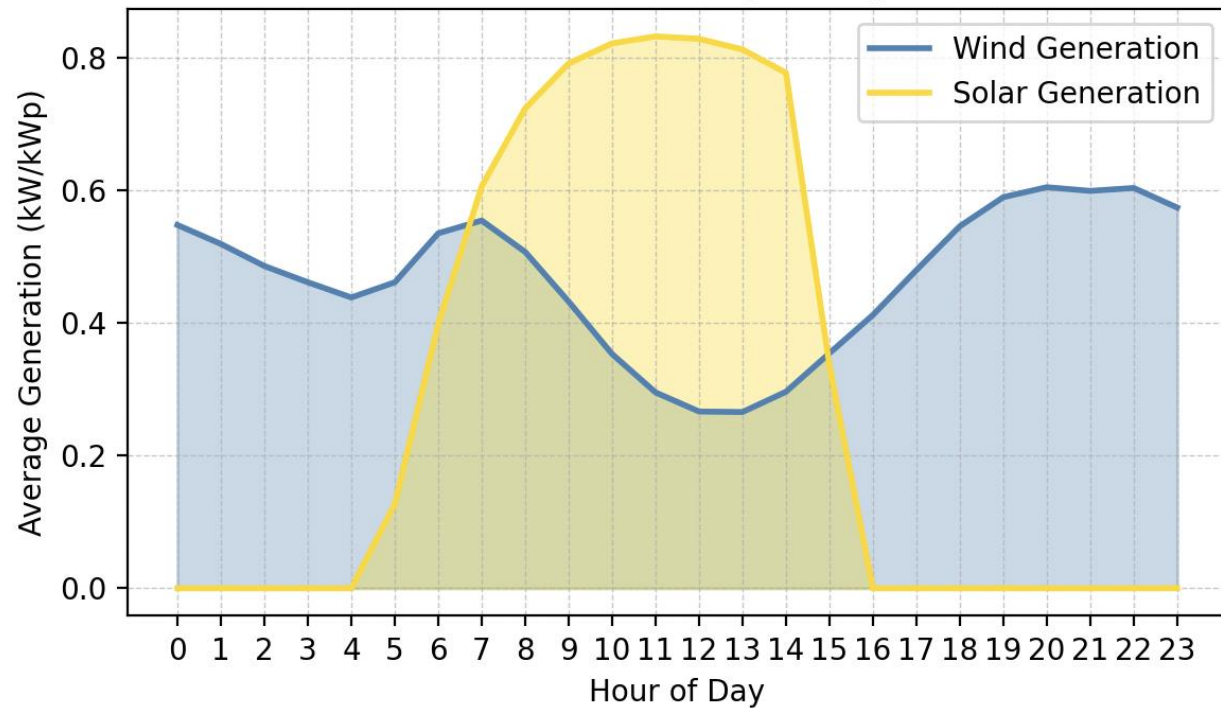


- **Emerging markets pay a premium:** Kenya's financing costs (WACC) are **>1000 bps** higher than developed markets like the U.S.
  - Kenyan green ammonia projects are more than **50% more expensive** due to financing costs alone.
- **Closing the competitiveness gap:**
  - Leverage superior renewable energy resources.
  - Secure concessional financing or targeted subsidies.
  - Factor in **additional externalities to improve economics.**



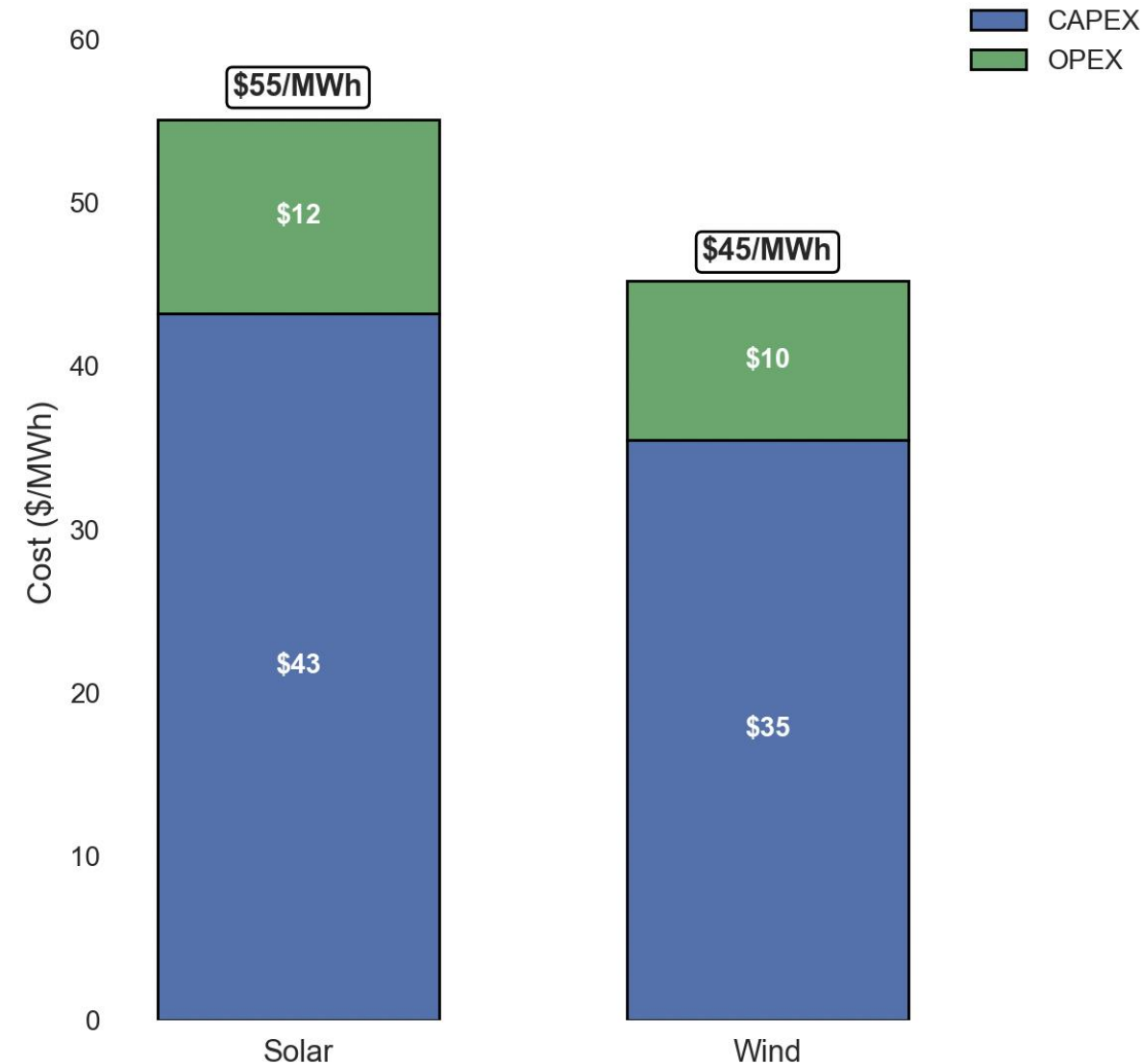
# A High Cost of Capital Results in Expensive Green Ammonia

**Average Daily Generation Profile  
Marsabit County, Kenya**



Consistent hourly capacity factors make **wind** the clear option for behind-the-meter renewable energy.

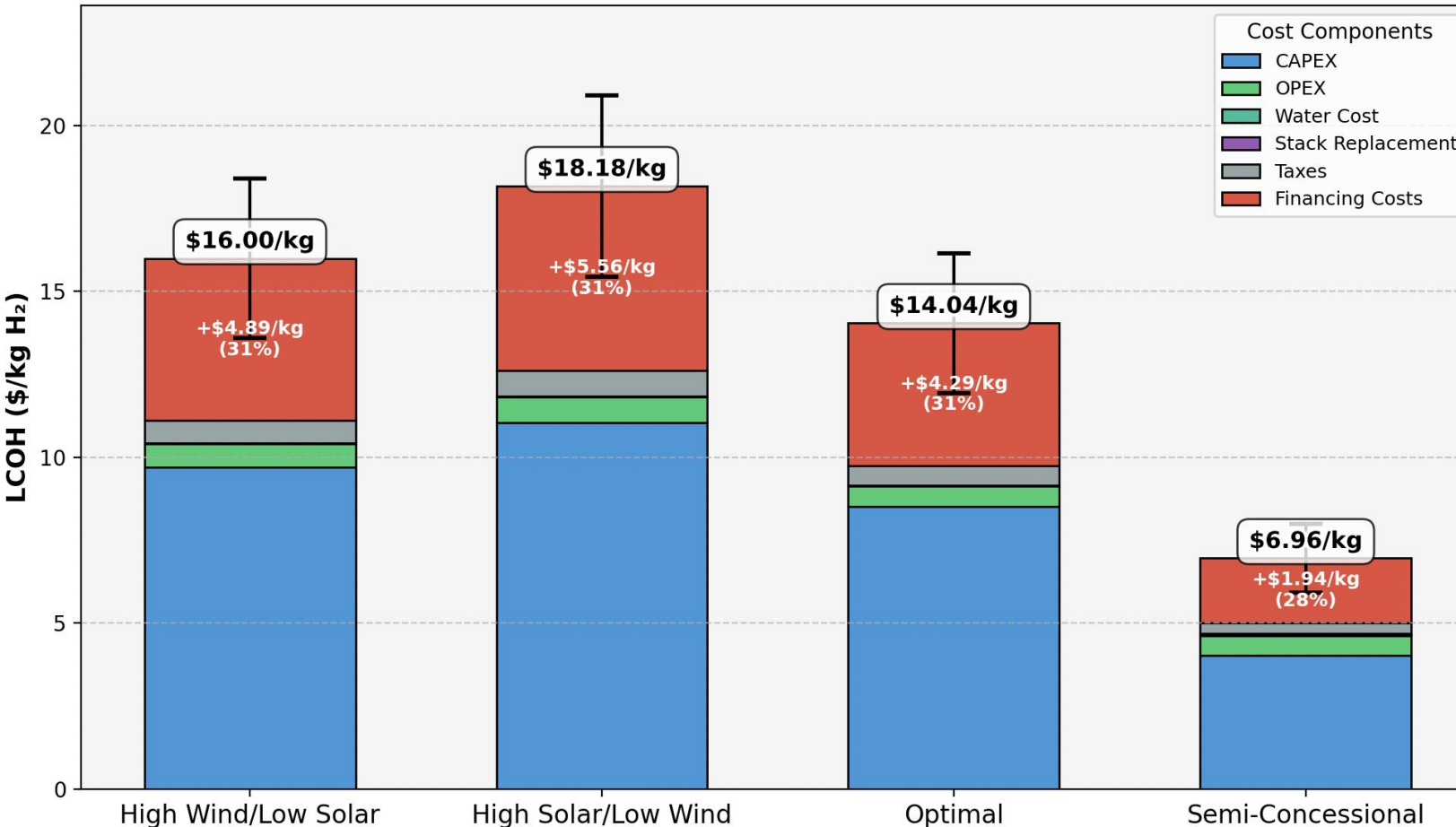
**Solar vs. Wind LCOE Breakdown**



# High Cost of Capital and CAPEX Translate to Green Hydrogen Costs



Levelized Cost of Hydrogen with Financing Impact



- High upfront CAPEX and financing costs lead to high hydrogen prices.
- Optimized renewable energy sizing reduces hydrogen cost to **\$14.00/kg**.
- An approximately 20% cost of capital makes **costs prohibitively expensive**.
- Moving forward will **require some form of concessional financing**. We estimate realistic values to be:
  - *Cost of Equity: 15%*
  - *Cost of Debt: 8%*

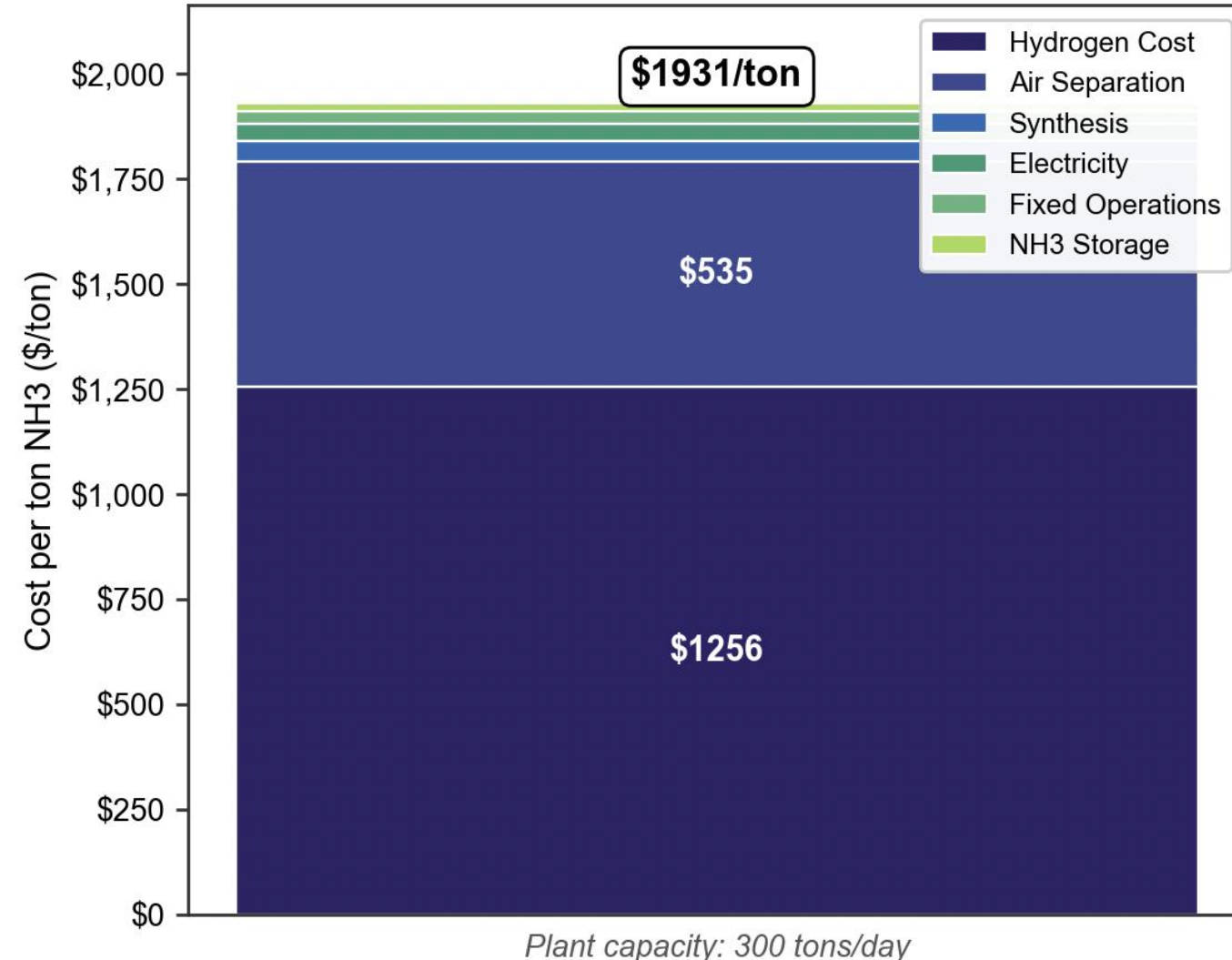




# High Green Ammonia Costs Create Inviably High Urea Prices



Green Ammonia Cost Breakdown



Translates to a Urea price of ~\$1100 per ton

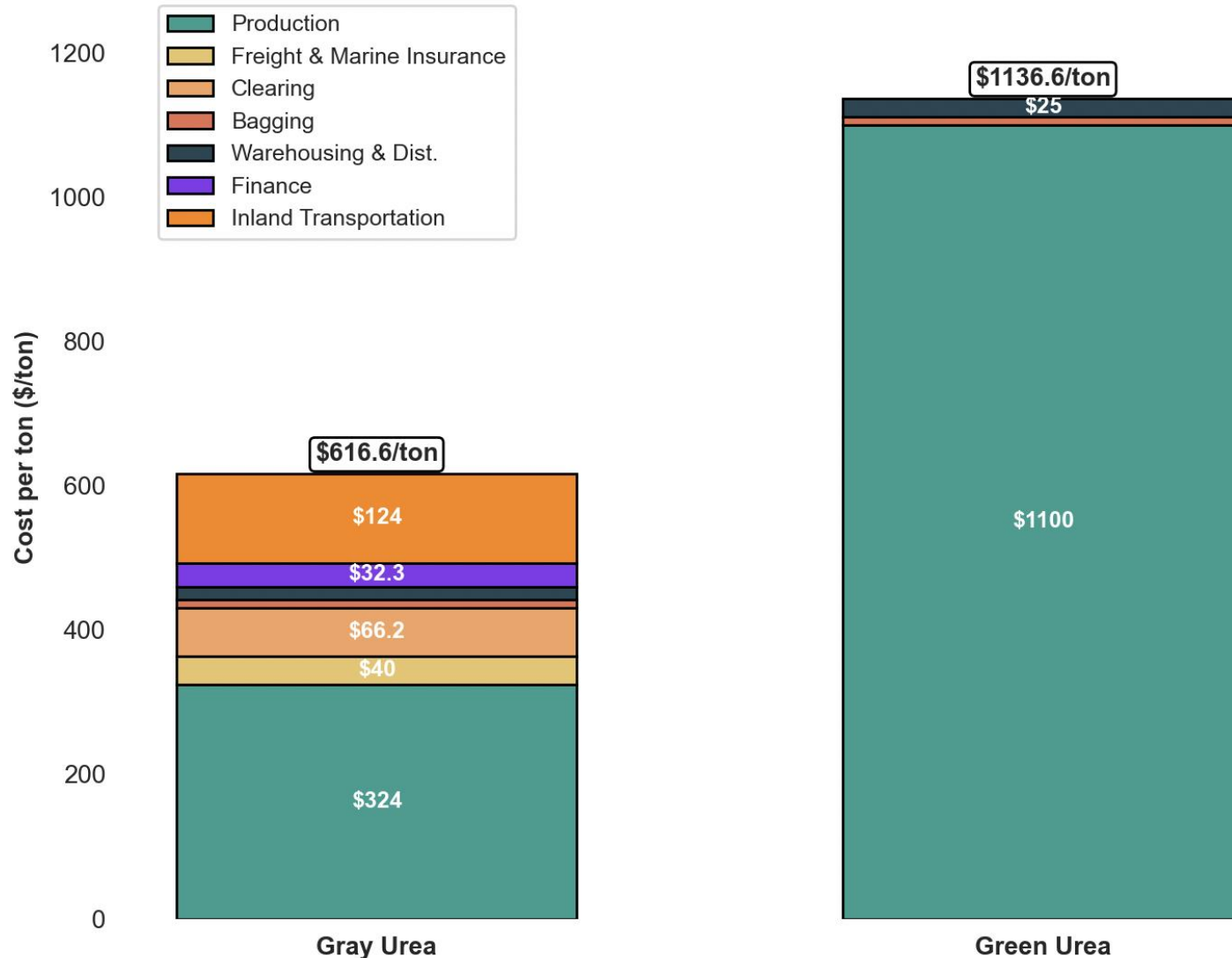
- Current CFR Urea market price: ~\$400 per ton
- Green urea is ~2.5 times more expensive than current gray urea.
- Sets an implicit, breakeven carbon price of ~\$0.77/kgCO<sub>2</sub>
  - Assumes 910 kgCO<sub>2</sub>/ton Urea
- Would require an extra **hydrogen subsidy of \$4.00/kg** to achieve cost parity.
  - Equivalent to a **WACC of ~4%**.



# Localized Production Reduces Cost Gap from 85%

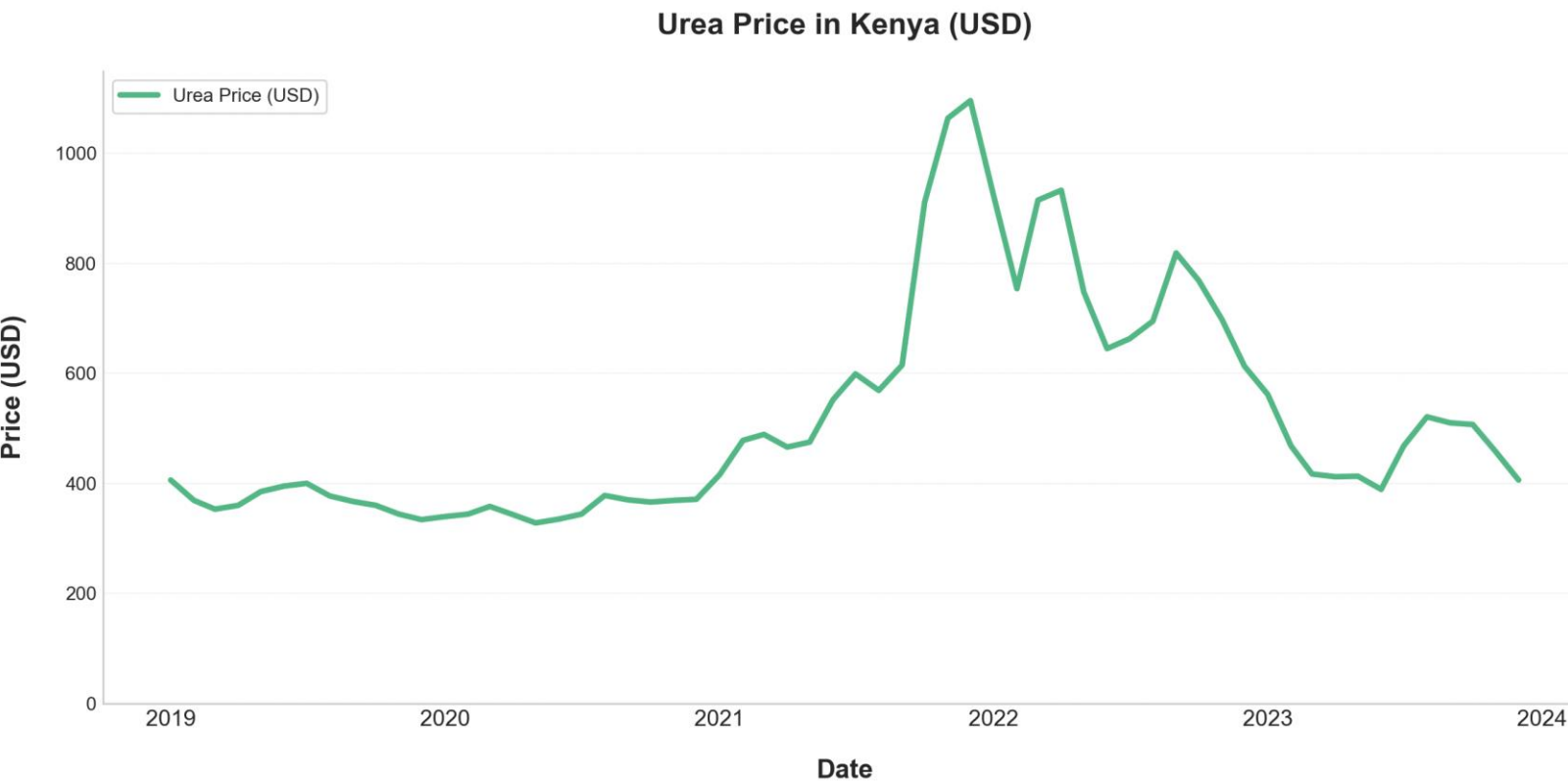


Delivered Urea Cost Breakdown



- Pricing in the effect of local production reduces **cost gap to ~\$500 USD/ton from ~\$700/ton.**
- Local production provides cost savings across:
  - Inland transportation costs
  - Import duties and taxes
  - Warehousing and distribution

# Volatile Urea Prices Justify a Premium for Fertilizer Supply



- Urea prices are highly volatile and dependent on:
  - Natural gas prices
  - International shipping routes
- Price variability results in **higher crop prices, expensive financing, and lower crop exports**
- Green urea provides a stable alternative while:
  - **Improving import-export balance**
- Estimate that offtakers will **absorb a 15% price increase in levelized cost** to secure stable supply of fertilizer.

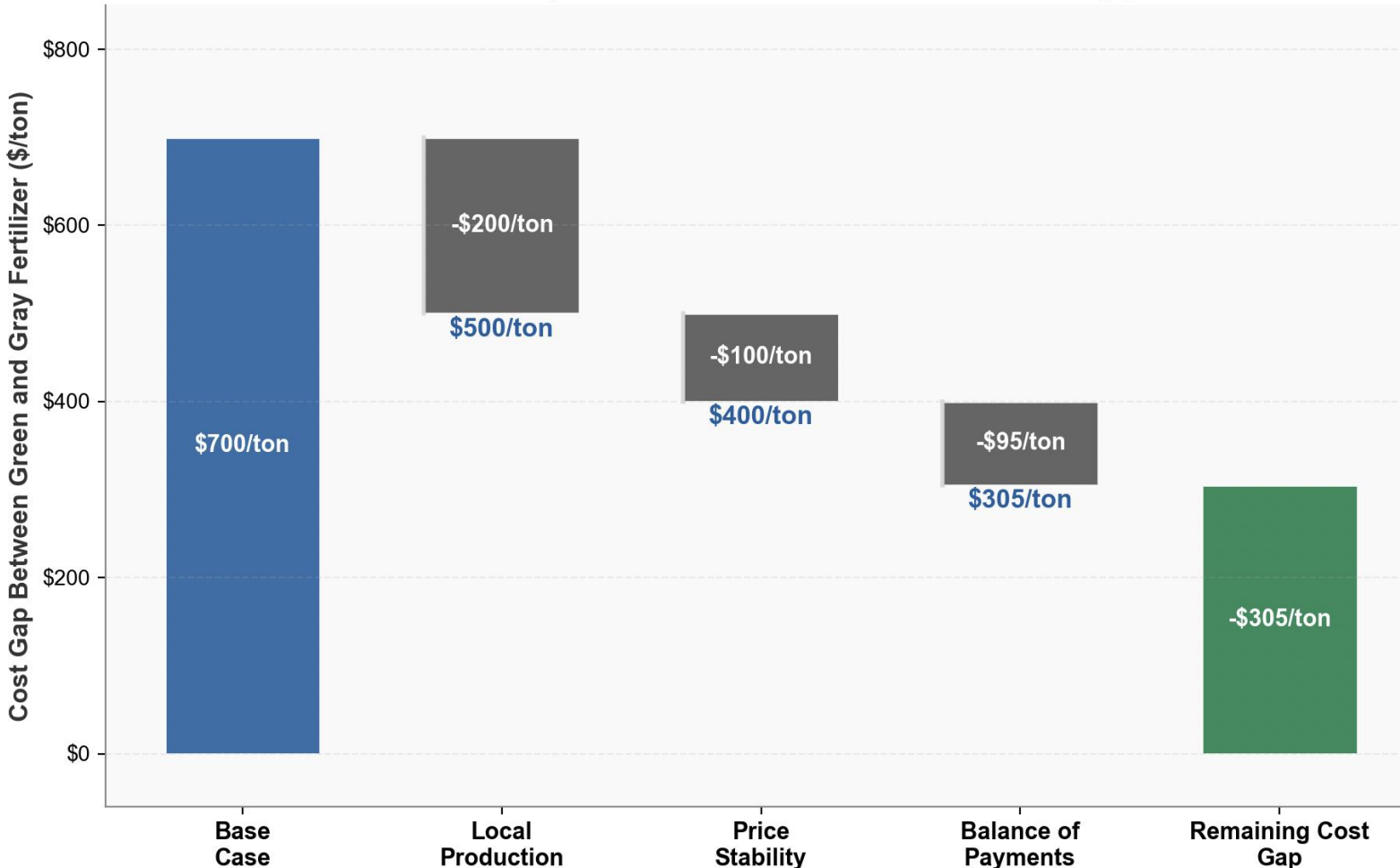


# Pricing Externalities Creates Pathways to Viability



## How Externalities Bridge the Green-Gray Fertilizer Cost Gap

*Each externality creates economic value that reduces the cost gap*



- Local production directly eliminates **~\$200/ton**.
- Estimate that farmers will pay a **15% premium** for stable fertilizer prices and supply.
  - Reducing cost gap by **\$90/ton**.
- Estimate that improved foreign exchange provides access to **debt 200 bp cheaper**.
  - Reducing cost gap by **\$50/ton**.
- Accounting for externalities, meeting the remaining cost gap would require a:
  - **LCOH of \$2.75**
  - **WACC of ~7%.**

# Conclusions and Next Steps



- **Traditional cost comparisons underestimate green ammonia's viability**
- **Pricing externalities can shift project economics**
- **Localized green fertilizer production offers clear strategic benefits:**
  - Enhanced **fertilizer price stability** for farmers.
  - Improved **national trade balances** (reduced foreign currency expenditure).
  - Reduced vulnerability to international supply disruptions.
- **Next Steps:**
  - Access better data to refine analysis
  - Leverage existing subsidies and incentives to further reduce project costs.
  - Target policy efforts on reducing financing costs (WACC) to competitive levels (~7%).
  - Clearly communicate externality benefits to secure buy-in from investors, policymakers, and offtakers.



# Thank You!



If interested in learning more or collaborating, please drop me a message at:

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